



What do I need?

2-3 bean seeds*

Glass jar

Paper towels

Water

Printed copy of page 3

*Broad bean seeds are the best to observe.



germination in a jar



What do I do?

Fill your glass jar to the top with scrunched up pieces of paper towel.

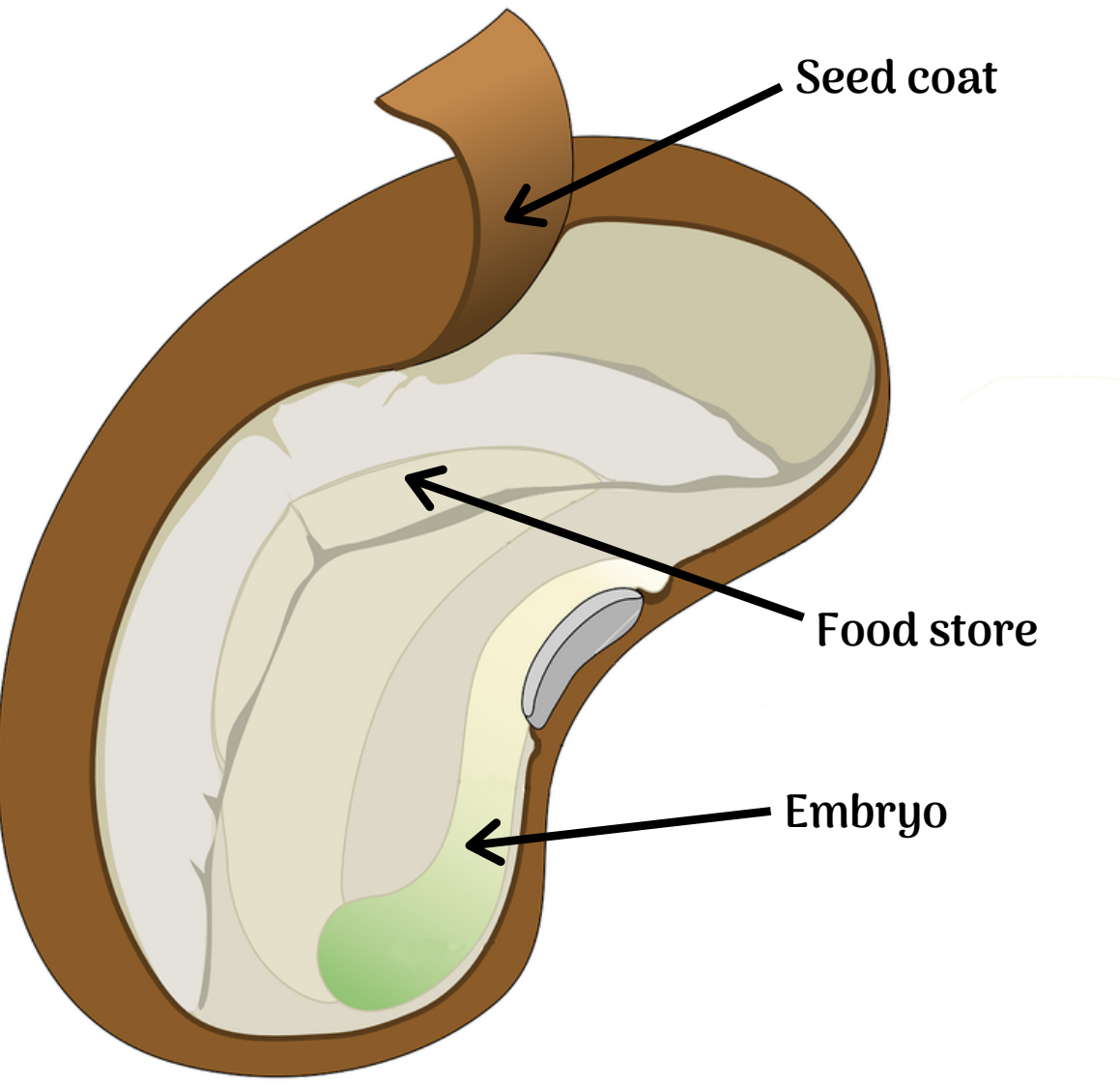
Carefully pour a little water into your jar until your paper towels are damp but not flooded. Pour away any excess water that pools at the bottom.

Push your seeds down between the sides of the jar and the paper towels so that they sit tightly about two-thirds down.

Place your jar in a sunny spot like a south-facing windowsill but make sure the seeds aren't in direct sunlight.

Track the growth of your seeds each day by writing in your germination diary (page 3). Use the information about the germination process on page 2 to help you. Try to learn all the key words and include these in your diary entries.

germination



Parts of a seed

- Seed coat*
The protective outer layer of the seed.
- Food store*
Energy (starch) to feed the young seedling until it can produce its own food by *photosynthesis*.
- Embryo*
The part of the seed which develops into the first root and first shoot of the plant.

Stage 1

When a seed is sown in the right conditions, it will take up water and begin to swell.

Stage 2

The embryo breaks through the seed coat and grows down into the soil to produce the first root (the radicle). This holds the seed in place and starts to take up water and minerals.

Stages of germination

Stage 3

The first shoot begins to grow towards the sun with its stem tip curved down to pull the seed leaves (cotyledon) through the surface of the soil. The seed leaves contain the stored energy reserves of the seed which the seedling uses for the next stages of growth.

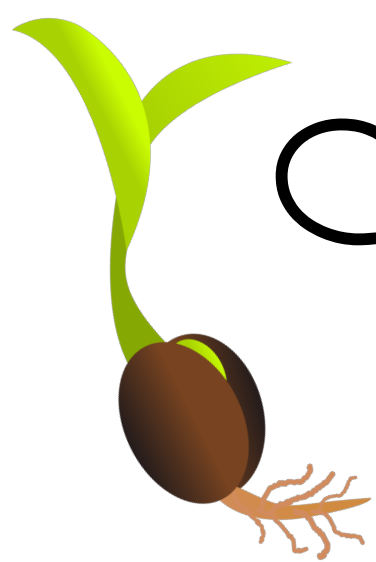
Stage 4

Secondary roots grow out into the soil helping the seedling to take up more water and nutrients.

Stage 5

The seedling's first true leaves begin to grow at the top of the shoot. These begin to photosynthesise, using sunlight to convert carbon dioxide and water into the energy for the plant to continue to grow.





My germination diary



Name of seed

Date planted

Draw or write any changes you see in your germination jar:

Day 1	Day 2	Day 3	Day 4
Day 5	Day 6	Day 7	Day 8
Day 9	Day 10	Day 11	Day 12
Day 13	Day 14	Day 15	Day 16